

# **Joint Workgroup Forum Illinois Commerce Commission**

**June 22, 2004**

***Miso***

# Overview

***Miso***

# The MISO today

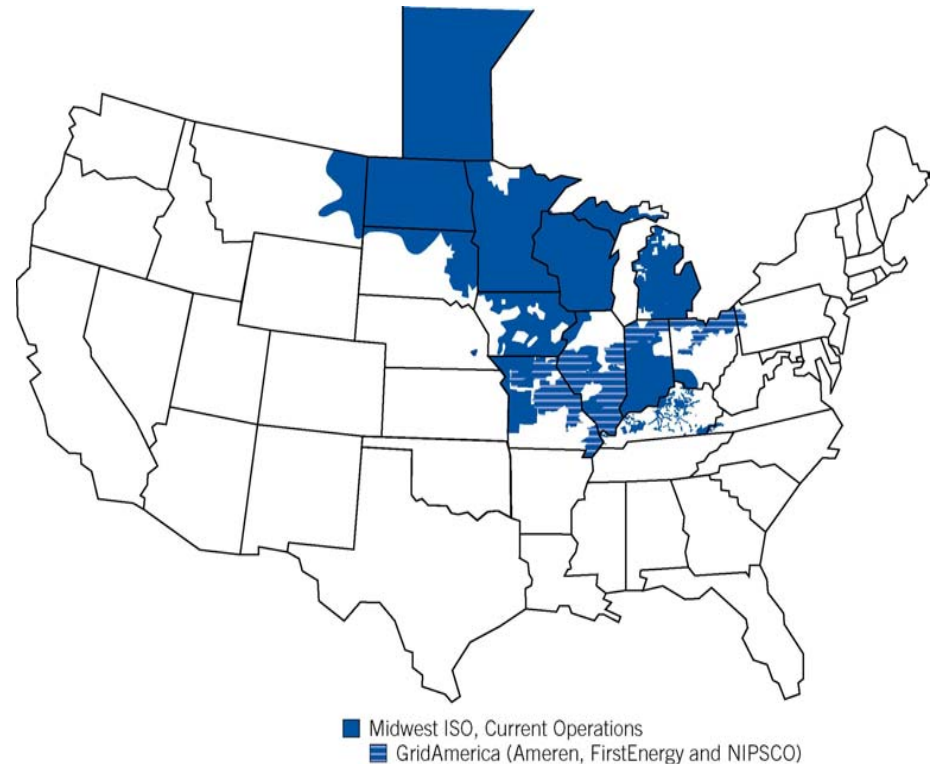
- What is MISO...today?
  - Reliability Coordinator
  - Tariff Administrator
    - Schedule (and bill for) transmission service
  - Perform long term transmission expansion planning
  - Market Monitoring
- Governed by an Independent Board of Directors
- Regulated by FERC

## ...and tomorrow

- What changes are on the horizon?
  - Starting on March 1, 2005 MISO will perform centralized security constrained economic dispatch.
    - Centralized – coordinated dispatch across the footprint
    - Security –dispatch respect security limits
    - Constrained – respect transmission constraints (including congestion).
    - Economic – least cost dispatch (based on offers)
  - Other activities will support this function.
    - Unit commitment, financial transmission rights, day ahead market

# Key Characteristics

- Large footprint
- Multi-control area environment
- Voluntary market
- Energy only market
- Security constrained economic dispatch through LMP
- Two settlement system
- Dynamic market monitoring



# Today

- Allocation of transmission capacity is currently done through “physical” rights.
- Physical rights are difficult to establish and “lock down”.
- Generators do not necessarily see the effect (either positive or negative) they may have on the overall network.
- “Relief” on a transmission line is accomplished through TLR (transmission load relief).
- Some degree of inefficiency

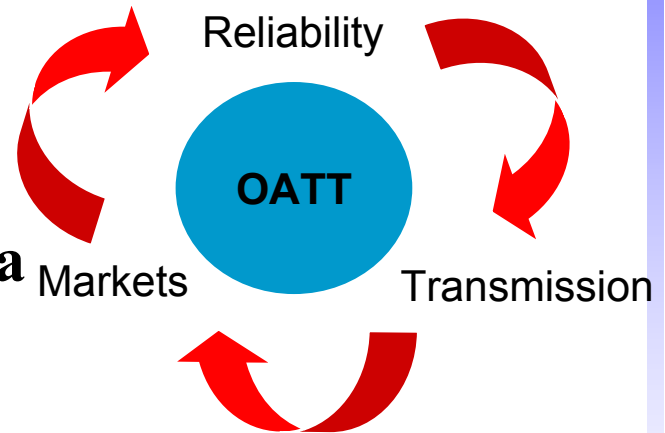
# Tomorrow

- Allocation of transmission capacity will be done by willingness to pay.
- For transactions occurring within the footprint there is no need to establish physical capacity transmission rights.
- Generator will see the effect their output has on overall costs.
- “Relief” is accomplished through bid based redispatch.
- Inefficiency is reduced.

# Rates and Services

# Midwest ISO Functions

- Provide regional tariff for energy industry to conduct commercial business in an open non-discriminatory environment
- Reliability planning, Real-time monitoring and corrective actions to protect generation and transmission assets
- Sell Transmission Service Products on a first-come first-served basis to commercial markets and maximize ROIC to Transmission Owners
- Accept, evaluate and award physical and financial bids and offers from portfolios provided by market participants (*Future Products*)



# Key Services Provided

- **Reliability Coordination**
- **Tariff Administration**
- **Generator Interconnection**
- **Expansion Planning**
- **Transmission and Generation Outage Coordination**
- **Scheduling**
- **Transmission Service Settlements**

# Ancillary Service and Schedules

- **Transmission Owner/Control Area Provided**
  - Schedule 2-Reactive Supply and Voltage Control
  - Schedule 4-Energy Imbalance (under Applicable Transmission Owner OATT)
- **Transmission Owner/Control Area Provided or Self-Supplied**
  - Schedule 3-Regulation and Frequency Response
  - Schedule 5-Operating Reserve-Spinning Reserve
  - Schedule 6-Operating Reserve-Supplemental Reserve
- **Midwest ISO Provided**
  - Schedule 1-Scheduling, System Control and Dispatch Service
  - Schedule 10-ISO Cost Recovery adder

# Transmission Service Products

- **Schedule 7-Firm Point-to-point (In/Within)**
  - Long-term Firm = > 1 Year
  - Short-term Firm < 1 Year
    - Daily
    - Weekly
    - Monthly
- **Schedule 8-Non-firm Point-to-point (In/Within)**
  - Hourly
  - Daily
  - Weekly
  - Monthly
- **Schedule 9-Network Integrated Transmission Service (Within)**
- **Schedule 14-Regional Through and Out**
  - Both Firm and Non-firm Point-to-point products available

# Ancillary Service and Transmission Rates

- **Ancillary Service Schedules**
  - Schedule 1-Single, system-wide Midwest ISO rate
  - Schedule 2-Based upon filed rate where the sink zone is located for in/within and Midwest ISO system-wide average for through/out
  - Schedule 3, 5 and 6- Based upon filed rate for the pricing zone where the Point of Delivery (POD) is located when provided by Transmission Owner
  - Schedule 10-Single,system-wide rate (80/20 split based upon capacity and energy)
- **Transmission Service**
  - Schedule 7 and 8
    - **In/within**
      - Based upon filed rate for the pricing zone where the POD is located
  - Schedule 9
    - **Based upon filed rate for the pricing zone where the load is physically located charged against a percent of monthly coincident peak load**
  - Schedule 14
    - **Through/Out**
      - Based upon system-wide average rate of discounted rates

# Revenue Distributions

- **Ancillary Service Schedules**
  - **Schedule 1**
    - **Revenue distribution follows the associated transmission service**
  - **Schedule 2**
    - **In/Within/Network Integrated Transmission Service (NITS)**
      - **Distributions made to Transmission Owner where the sink zone is located**
    - **Out/Through**
      - **Distributions to Transmission Owners based upon a 50/50 split; flows and relative share of gross transmission plant**
  - **Schedule 3,5 and 6**
    - **Distributions made to the Transmission Owner where the sink zone is located for In/Within/NITS; Distribution shared for Through and Out**
- **Transmission Service**
  - **Schedule 7,8, and 9**
    - **Distributions made to Transmission Owner where the sink zone is located**
  - **Schedule 14**
    - **Distributions made to Transmission Owners based upon 50/50 split; flows and relative share of gross transmission plant**

# **GridAmerica Service Agreement**

- **Conduct Generation Interconnection Studies**
- **Evaluate Long-term Transmission Service Request**
- **Perform Scheduling for *all* GridAmerica Companies and assist Midwest ISO scheduling when required**

# Market Structure

# Current Midwest Market

- **Bilateral transactions facilitated by “physical” transmission service provided under regional OATT**
- **MISO’s primary responsibilities related to the market include:**
  - **Acceptance and analysis of requests to reserve transmission capacity for future scheduling of transactions**
  - **Acceptance of schedules for approved reservations**
  - **Monitoring transmission usage**
  - **Providing reliability coordination**
  - **Invoicing participants monthly for use of transmission lines as well as other associated services**

# **“Day 2” LMP Market Overview**

- **The Midwest ISO will operate energy markets to develop day-ahead transmission schedules and to dispatch generation in real-time to manage congestion and schedule imbalances**
- **Markets will be based on centralized dispatch, using a Locational Marginal Pricing (LMP)**
  - **LMP at a bus or a defined aggregated set of buses is a single price (made up of three components - energy, congestion, and losses) reflecting the marginal value of energy at that location**
- **Market Participants may acquire Financial Transmission Rights (FTRs) to hedge potential Day Ahead LMP differences.**
- **Market Participants will receive settlement statements based upon their position in each of the MISO administered markets**

# Resource Adequacy

- **The Midwest ISO tariff incorporates, by reference, existing resource adequacy standards.**
  - **MISO will work with states and RRCs to identify standards in place for all load under the tariff.**
- **Units identified as counting toward compliance with these standards will be required to offer into the Day Ahead and Real Time markets when the unit is:**
  - **Available**
  - **Not identified as providing regulation or operating reserves**
  - **Not identified as the source of an export transaction**
- **A regionally coordinated approach to resource adequacy is under development by MISO stakeholders and the OMS.**

# Benefits for Retail Suppliers

- Reduced barriers to trade
  - Elimination of pancaked transmission rates
  - Uniform access -- one stop shopping for transmission service and interconnection
  - TLR replaced with market-based redispatch
- Coordinated markets
  - Liquidity/transparency
  - Expanded choices
    - Self-scheduled generation or load
    - Bilateral transactions
    - Spot purchases or sales
    - Forward hedging
    - Virtual transactions

# Benefits (continued)

- Activities and interactions with Midwest ISO will vary depending on an entities existing contractual arrangements.
  - Current transmission customers gain opportunities to directly participate in the Midwest ISO-administered regional power markets
  - Entities taking delivery of energy from other transmission customers will be largely unaffected.
    - *Level of involvement in market and realization of benefits depends on existing power purchase contract terms and conditions.*

# Day-Ahead Market

- Supply Offers and Demand Bids are due at 0900 EST prior to the operating day
- MISO uses Security Constrained Unit Commitment (SCUC) to economically commit units to meet bid demand
- MISO uses Security Constrained Economic Dispatch (SCED) to efficiently allocate Transmission Capacity and minimize Congestion
- Day-Ahead Market provides the opportunity to lock-in prices prior to the operating day – a forward hedge

# Day Ahead Markets Transactions

- Transaction types include:
  - Participant scheduled injections and withdrawals
  - Participant bids to buy and offers to sell energy
  - Participant scheduled financial bilateral transactions
  - Participant scheduled power imports or exports
  - Participant submitted virtual offers or bids
- Settlement for transactions is based on:
  - MISO calculated Locational Marginal Prices (LMP)
  - MISO payment for energy sales, charges for energy purchases, and charges for transmission

# Real-Time Centralized Dispatch

- MISO uses the Security Constrained Economic Dispatch (SCED) program every 5 minutes of each operating hour
- MISO sends control areas Net Scheduled Interchange (NSI) and basepoints for generators
  - NSI and resource basepoints sent every 5 minutes
  - Dynamic Schedules sent every 5 minutes
  - Ramped Control Area NSI sent every 4 seconds
  - Ramped Dynamic Schedule values sent every 4 seconds
- Control Areas will be responsible for regulation between dispatch interval and for operating reserves
- MISO calculates ex-post Real-Time LMPs based on actual system activity

# Financial Transmission Rights

- Midwest ISO's congestion management system includes Financial Transmission Rights (FTRs)
  - Market Participants may acquire FTRs to hedge congestion costs
- FTRs are financial instruments
  - Market Participants need not hold FTRs to schedule transactions
  - An FTR Holder is not required to schedule transactions by virtue of holding FTRs
- Only Market Participants can hold FTRs
- An annual allocation will be performed to allocate FTRs to existing transmission customers using a simultaneous feasibility algorithm

# Acquiring FTRs

- FTRs will be awarded annually in a manner that affords transmission customers under existing transmission contracts the same level and quality of transmission service, to the extent possible given the requirement of simultaneous feasibility
- The Midwest ISO shall conduct voluntary FTR Auctions
  - Market Participants may offer to sell allocated FTRs
  - The Midwest ISO will sell any residual monthly FTRs
- FTRs will be awarded for new transmission service, to the extent feasible
- The Midwest ISO shall issue FTRs to all Market Participants that fund Network Upgrades

# FTRs In Retail Choice States

- FTRs will be re-allocated to reflect load shifts on an annual basis in the nomination process.
  - LSE's peak load for nomination purposes will reflect losses or gains due to load shifts.
- FTR value will be allocated and re-allocated monthly between annual allocation periods to reflect load shifts.
  - LSEs that acquire load will receive monthly payments based on monthly Auction Revenue Rights (ARRs)
    - The value of ARR is determined by monthly FTR auction clearing prices.
  - LSEs that lose load will be financially responsible for funding these ARRs.
- LSEs that acquire load may use ARR revenue to buy FTRs or to offset congestion costs.

# Information Resources

- Websites
  - [www.midwestmarket.org](http://www.midwestmarket.org)
  - [www.midwestiso.org](http://www.midwestiso.org)
- Documentation
  - On [www.midwestmarket.org](http://www.midwestmarket.org)
    - Guiding documents – Business Practices Manuals, Draft Tariff
    - Informational documents – Training presentations, Testing documentation, etc.
    - Technical Infrastructure documents – Implementation documents
      - Technical specifications
      - Testing information
    - Market Registration documents  
Registration packet, public data

# Midwest ISO Training

- Midwest ISO offers various training courses throughout the year in various formats (video, webcast, in person)
- Training Calendar is available at <http://www.midwestmarket.org/Training/training.cfm>